

$^{187}\text{Re}(\text{d},2\text{n}\gamma)$, $^{187}\text{Re}(\text{p},\text{n}\gamma)$ 1975So01

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	M. S. Basunia	NDS 110,999 (2009)	1-Nov-2008

$E(\text{d})=13.5$ MeV, $E(\text{p})=9$ MeV, target $J^\pi=5/2^+$.

The level scheme was constructed by 1975So01 from $\gamma\gamma$ -coincidence data and from previously known levels.

 ^{187}Os Levels

E(level) [†]	J^π [‡]	$T_{1/2}$	Comments
0.0 [#]	1/2 ⁻		
9.7 [@] 5	3/2 ⁻		Additional information 1.
74.17 [#] 22	3/2 ⁻		
75.5 [@] 4	5/2 ⁻		Additional information 2.
(100.45 ^{‡a} 3)	7/2 ⁻		Additional information 3.
187.34 [#] 16	5/2 ⁻		
190.85 [@] 22	7/2 ⁻		
257.0 ^b 3	11/2 ⁺	231 μs 2	$T_{1/2}$: from 1967Co20. Other values: 225 μs 10 (1964Br27), 216 μs (1965Mc03), 240 μs (1967Iv03), 239 μs 50 and 221 μs 50 (1968Io01).
262.98 ^a 25	(9/2 ⁻)		
332.6 [#] 3	(7/2 ⁻)		
341.7 [@] 6	(9/2 ⁻)		
418.9 ^b 4	(13/2 ⁺)		
444.7 ^{?&} 4	(7/2 ⁻ , 9/2 ⁻)		
459.42 ^a 25	(11/2 ⁻)		
508.1 ^{?#} 4	(9/2 ⁻)		
511.8 [@] 6	(11/2 ⁻)		
556.9 ^c 4	(9/2 ⁺)		
617.8 ^b 4	(15/2 ⁺)		
683.5 ^{?&} 5	(11/2 ⁻ , 13/2 ⁻)		
684.4 ^{?a} 4	(13/2 ⁻)		
727.0 ^{?c} 5	(11/2 ⁺)		
817.4 ^b 4	(17/2 ⁺)		
885.4 ^{?c} 7	(13/2 ⁺)		
934.5 ^a 4	(15/2 ⁻)		
1084.0 ^b 5	(19/2 ⁺)		
1210.3 ^{?a} 6	(17/2 ⁻)		

[†] From a least-squares adjustment to the γ -ray energies.

[‡] From Adopted Levels.

[#] 1/2⁻[510] band.

[@] 3/2⁻[512] band.

[&] 9/2⁻[505] band.

^a 7/2⁻[503] band.

^b 11/2⁺[615] band.

^c 9/2⁺[624] band.

$^{187}\text{Re}(d,2n\gamma), ^{187}\text{Re}(p,n\gamma)$ **1975So01 (continued)**

$\gamma(^{187}\text{Os})$								
E_γ^\dagger	$I_\gamma^\#$	$E_i(\text{level})$	J_i^π	E_f	J_f^π	Mult.	δ	Comments
74.3 3	1.5 3	74.17	3/2 ⁻	0.0	1/2 ⁻			
111.6 3	2.0 7	187.34	5/2 ⁻	75.5	5/2 ⁻			I_γ : Average of 3.4 7 (d,2n γ) and 0.6 1 (p,n γ).
113.1 3	0.5 1	187.34	5/2 ⁻	74.17	3/2 ⁻			I_γ : Average of 0.4 1 (d,2n γ) and 0.7 1 (p,n γ).
115.5 3	2.7 5	190.85	7/2 ⁻	75.5	5/2 ⁻			I_γ : <10 (p,n γ).
145.0 3	1.3 3	332.6	(7/2 ⁻)	187.34	5/2 ⁻			
150.9& 3	0.7 2	341.7?	(9/2 ⁻)	190.85	7/2 ⁻			
156.5 3	10.0 20	257.0	11/2 ⁺	100.45?	7/2 ⁻	M2+E3	0.31 4	I_γ : Average of 10.0 20 (d,2n γ) and 10.0 20 (p,n γ). Mult.: $\alpha(K)\text{exp}=7.2$ from $I(K \times \text{ray})/I_\gamma$ (1967Co20). Other measurement: $\alpha(K)\text{exp}<4.8$ (1964Br27). δ : from ^{187}Ir ε decay.
158.4& 3	2.5 9	885.4?	(13/2 ⁺)	727.0?	(11/2 ⁺)			I_γ : Average of 0.8 2 (d,2n γ) and 4.3 9 (p,n γ).
161.9 3	16 5	418.9	(13/2 ⁺)	257.0	11/2 ⁺			I_γ : Average of 18 4 (d,2n γ) and 14 3 (p,n γ).
162.4 3	17 5	262.98	(9/2 ⁻)	100.45?	7/2 ⁻			I_γ : Average of 12.4 25 (d,2n γ) and 21 4 (p,n γ).
169.9 3	15 4	727.0?	(11/2 ⁺)	556.9	(9/2 ⁺)			I_γ : Average of 12.5 25 (d,2n γ) and 17 3 (p,n γ).
174.8& 3	1.2 2	508.1?	(9/2 ⁻)	332.6	(7/2 ⁻)			
177.7 3	14 4	187.34	5/2 ⁻	9.7	3/2 ⁻			I_γ : Average of 12.4 25 (d,2n γ) and 15 3 (p,n γ).
181.0 3	21 4	190.85	7/2 ⁻	9.7	3/2 ⁻			I_γ : Average of 20 4 (d,2n γ) and 22 4 (p,n γ).
187.4 3	8.1 23	187.34	5/2 ⁻	0.0	1/2 ⁻			I_γ : Average of 7.3 15 (d,2n γ) and 8.9 18 (p,n γ).
196.3 3	7.9 22	459.42	(11/2 ⁻)	262.98	(9/2 ⁻)			I_γ : Average of 9.1 18 (d,2n γ) and 6.7 13 (p,n γ).
198.9 3	6.7 13	617.8	(15/2 ⁺)	418.9	(13/2 ⁺)			
199.4 3	4.1 8	817.4	(17/2 ⁺)	617.8	(15/2 ⁺)			
225.4& 3	4.8 14	684.4?	(13/2 ⁻)	459.42	(11/2 ⁻)			I_γ : Average of 6.4 13 (d,2n γ) and 3.2 6 (p,n γ).
239.2& 3	2.5 5	683.5?	(11/2 ⁻ ,13/2 ⁻)	444.7?	(7/2 ⁻ ,9/2 ⁻)			
251.0 3	6.5 13	934.5	(15/2 ⁻)	683.5?	(11/2 ⁻ ,13/2 ⁻)			
258.6 3	8.4 24	332.6	(7/2 ⁻)	74.17	3/2 ⁻			I_γ : Average of 8.8 18 (d,2n γ) and 8.1 16(p,n γ).
266.2 3	2.0 4	1084.0	(19/2 ⁺)	817.4	(17/2 ⁺)			
275.7& 3	2.1 4	1210.3?	(17/2 ⁻)	934.5	(15/2 ⁻)			
299.7 3	14 4	556.9	(9/2 ⁺)	257.0	11/2 ⁺			I_γ : Average of 15 3 (d,2n γ) and 13 3 (p,n γ).
308.4 3	5.8 18	727.0?	(11/2 ⁺)	418.9	(13/2 ⁺)			I_γ : Average of 7.9 16 (d,2n γ) and 3.8 8 (p,n γ).
317.6& 3	3.2 9	508.1?	(9/2 ⁻)	190.85	7/2 ⁻			I_γ : Average of 3.0 6 (d,2n γ) and 3.5 7 (p,n γ).
321.0& 3	4 @ 4	508.1?	(9/2 ⁻)	187.34	5/2 ⁻			
321.0& 3	21 @ 4	511.8?	(11/2 ⁻)	190.85	7/2 ⁻			
344.4& 3	7.2 14	444.7?	(7/2 ⁻ ,9/2 ⁻)	100.45?	7/2 ⁻			
359.1 3	5.1 10	459.42	(11/2 ⁻)	100.45?	7/2 ⁻			
361.1 3	7.4 15	617.8	(15/2 ⁺)	257.0	11/2 ⁺			

Continued on next page (footnotes at end of table)

$^{187}\text{Re}(\text{d},2\text{n}\gamma)$, $^{187}\text{Re}(\text{p},\text{n}\gamma)$ 1975So01 (continued) $\gamma(^{187}\text{Os})$ (continued)

E_γ^\dagger	$I_\gamma^\#$	$E_i(\text{level})$	J_i^π	E_f	J_f^π
398.2 3	4.5 9	817.4	(17/2 ⁺)	418.9	(13/2 ⁺)
420.8& 3	2.0 4	684.4?	(13/2 ⁻)	262.98	(9/2 ⁻)
466.7 3	2.0 4	1084.0	(19/2 ⁺)	617.8	(15/2 ⁺)
475.1 3	6.8 14	934.5	(15/2 ⁻)	459.42	(11/2 ⁻)
526 [‡] & 1		1210.3?	(17/2 ⁻)	684.4?	(13/2 ⁻)

[†] Uncertainties are of the order of 0.1 to 0.3 keV; 0.3-keV uncertainty adopted by the evaluator.

[‡] Observed only in the $\gamma\gamma$ -coincidence measurement.

[#] Relative photon intensities measured in (d,2n γ) at 125° angle to the beam axis, except otherwise noted. The uncertainties are of the order of 5 to 30% (1975So01), and 20% uncertainty has been adopted by the evaluator.

[@] Intensity divided by the evaluator on the basis of intensity balance through the 187.5 and 190.8 levels. $I_\gamma(321)=24.8$.

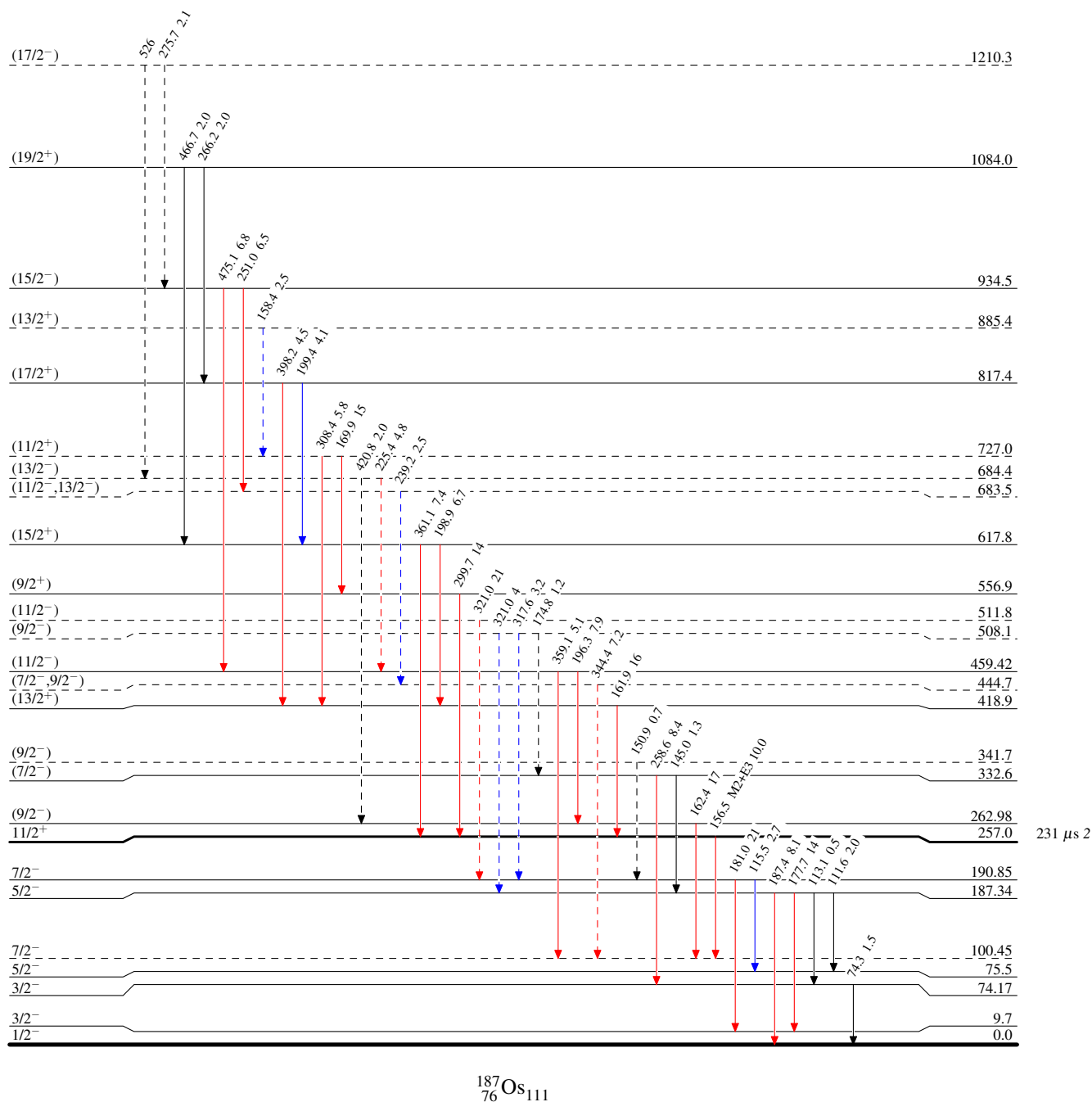
[&] Placement of transition in the level scheme is uncertain.

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Legend

Level Scheme
 Intensities: Relative I_γ

- $I_\gamma < 2\% \times I_\gamma^{\text{max}}$
- $I_\gamma < 10\% \times I_\gamma^{\text{max}}$
- $I_\gamma > 10\% \times I_\gamma^{\text{max}}$
- - - - - γ Decay (Uncertain)

 $^{187}_{76}\text{Os}_{111}$